Nevertheless, any educational communicator, technologist or broadcaster, who is interested in how television impacts on learners, should have a full understanding of the workings of television production and for this, Zettl's *Television Production Handbook 4th, edition* is an excellent and valuable resource.

REFERENCE

Fleming, M. (1981). Characteristics of effective instructional presentations. *Educational Technology,* 21, 33-38.

Practical Guide to Computers in Education, Second Edition, by Peter Cobum, Peter Kelman, Nancy Roberts, Thomas F.F. Snyder, Daniel H. Watt, Cheryl Weiner. Addison-Wesley, 1985.

Reviewed by Arnold Keller

It's a commonplace that the computer will remain an ex-miracle until teachers genuinely know what to do with it. Regardless of what's spent on shiny hardware or slick software, not much useful in the classroom can happen until teachers see themselves as directing learning, instead of hanging on for dear life. How, then, to present the technology to give teachers a sense of what they can do, rather than have done to them? The second edition of the *Practical Guide to Computers in Education* sets out the basics of educational computing, from the chips and bolts of hardware to the attendant educational and ethical implications. No *mere* book, of course, can substitute for the sometimes exhilarating, sometimes frustrating, first-hand experience of learning about computers. But there's a place for good books, and this one is a solid effort from a solid group of writers.

The authors' experience, which ranges from academia to software design, produces a very comprehensive account of educational computing. The book begins -- too breathlessly, perhaps -- by announcing yet again that the computer revolution is here (or, as they say, "here!"). It then airs its version of how computers will affect schools through a series of anecdotes that outlines the experiences of various teachers. Since the book makes no pretense at academic journalese, the teachers are Samantha, Richard, Jean, Karen, and so on. That's not to imply that the anecdotes aren't well thought-out; it's merely to suggest that the rhetoric is a bit cozy.

The book really gets started with a survey of classroom computer applications that successfully negotiates its way between being comprehensive and being superficial. CAI is represented by examples of drill-and-practice and tutorial lessons (but unfortunately not by "intelligent CAI", where the future surely is). There are also examples of demonstrations, 'simulations, games, and of such adjunctive uses as word processing, number crunching, and data bases. Included too is a brief but clear introduction to LOGO to show the computer as a teacher of thinking. None of this, of course, can hope to make a reader anything more than vaguely aware of the range of computer applications; but that's a limitation inherent in any survey.

For some reason, the authors of many introductory texts feel a need to regale readers with hardware chatter. Here this results in a chapter predictably called "Bits and Bytes" (mercifully not "Bits 'n Bytes"), with much ado about CPUs, ASCII code, circuit boards, registers, RAMS, ROMs, PROMs, and the not to be forgotten EPROMs. It's easy to

imagine the numbed response such talk must evoke from computer novices. This is a chapter to be skipped.

Cooler heads prevail with basic advice on buying hardware and software. The authors ask the right question -- "What use do we intend to make of the computer?" -- which quite properly puts the focus on function, rather than on the sexiest piece of hardware that a salesman knows about or the amount of money that can be dislodged from a school's budget. There's some very hardheaded and useful advice here: the need for local service, for talking to people who actually own what you think you want to buy, for being wary of untested products and untested companies.

The chapter on choosing educational software is the books best. The writers have no illusions about the quality of most available stuff (which ranges from mediocre to awful, with a handful of exceptions). They neatly outline the process of getting and using educational software, with examples from the shark-infested waters. There are concise accounts on determining how suitable a program is for students, how it fits into the curriculum, the values it conveys, and its instructional design (of which only few programs seem to have more than a nodding acquaintance). The book here lives up to its title as a very practical guide, indeed.

The next chapters- do almost as well. There is more hardheaded discussion (without being cynical) on the politics of introducing computers into schools, including how decisions are made and where the money comes from. The authors give time to the problems of preparing teachers, students, and administrators for their new roles, along with the various conflicts that inevitably arise. There is also a useful section on integrating computers into schools, in the mundane but necessary terms of their physical placement and how they get used on a day-to-day basis. (Somewhat in the same spirit, an annotated list of resources appears at the back of the book; whether it can resist being dated is an open question.)

The book concludes not with practical advice on what to do but with the far deeper issue of educational computing in transition. Without too much polemic, the authors ask us to consider the sort of pedagogy we need from educational software, the sort of teacher training, the sort of social problems we can expect -- in short, the sort of questions that need thinking through. The problems are real enough, the discussion enlightened.

Training teachers for the computer miracle has turned out to be where we'd better have another miracle. Again, no book can substitute for the unavoidable and determined first-person hours of slogging we need to make the computer our own. That is not to say that teachers must themselves become programmers or courseware designers, any more than car drivers must become mechanics. but drivers who can protect themselves from incompetent or dishonest garages are clearly better off; so too for teachers and their computers. A purely literary sense of a technology, of course, won't do. Only time and trial will produce confident teachers who can make informed choices about what's right for their classrooms. But the *Practical Guide to Educational Computing* should help the miracle along.

Rose Bene is a doctoral student in Educational Technology at Concordia University and a former employee of ACCESS Alberta.

Arnold Keller teaches courseware design and educational computing at Concordia University. He is the author of *when Machines Teach: Designing Computer Courseware* (Harper   Row, 1986) and the forthcoming *LOGO Courseware Cookbook.*